

## REMARKS

Rejection of Claims 1-4, 7-10, 12, 15-20, 31-37, 39, 40, and 42 under 35 U.S.C. §102(b)

Claims 1-4, 7-10, 15-20, 31-37, 39, 40, and 42 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 5,106,944 to Sublett ("Sublett"). Applicants respectfully traverse the rejection and the statements made in support thereof.

A proper rejection under 35 U.S.C. §102(b) requires that every element of the claim be found "in a single prior art reference." See *In re Robertston*, 169 F.3d 743, 745 (Fed. Cir. 1999). "To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim." See *Brown vs. 3M*, 265 F.3d 1349, 60 USPQ2d 1375 (Fed. Cir. 2001). Further, "an anticipating reference must describe the [claimed] subject matter with sufficient clarity and detail to establish that the subject matter existed and that its existence was recognized by persons of ordinary skill in the field of the invention." See *ATD Corp. vs. Lydall, Inc.* 159 F.3d 534, 545 ((Fed. Cir. 1998) (citing in *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990)). Applicants respectfully submit that the cited reference, Sublett, both fails to disclose the invention as claimed and does not describe the claimed subject matter with sufficient clarity to be recognized by a person of ordinary skill in the art.

The anticipation rejection is grounded on the broad disclosure of Sublett which discloses a process for preparing polyesters and copolyesters using a catalyst system comprising a complex of titanium alkoxide with an alkali or alkaline earth metal salt in which the titanium concentration is between 10-100 ppm, based on the acid fraction of the polyester. This catalyst complex results in reduced formation of yellow color when the polyester is blended with polycarbonate or other phenolic type polyesters.

The disclosure of Sublett is directed solely to the benefits of alkali or alkaline earth metal complexes with titanium compounds and not to using lower amounts of titanium to reduce color. The range of titanium disclosed in Sublett, therefore, is broad, taught generally, and would not have fairly suggested the much narrower range claimed by Applicants with sufficient clarity and detail such that any special advantage from this range would be recognized by persons of ordinary skill in the art. For example, Sublett makes no mention of any benefit of preparing polyesters using a titanium range of about 1 to about 30 ppm. There is no reference to any effects of low or high titanium concentration and no recognition of any benefit from using lower amounts of titanium. Sublett teaches, in fact, that the preferential concentration of titanium for poly(1,4-cyclohexylene dimethylene terephthalate) is  $100 \pm 25$  ppm and 50 ppm for polyesters containing CHDM and ethylene glycol (col. 3, lines 40-47); these amounts are far outside of Applicants' claimed range and clearly show that Sublett was not in possession of the instant invention. Sublett provides no examples of a polyester or a polyester/polycarbonate blend prepared with titanium levels below 50 ppm. In addition, several of these examples show high color when no alkali metal is present, yet there is no mention of using lower concentrations of titanium to address this problem. In other words, the disclosure of Sublett does not identify the claimed invention at all and makes no statements that would cause the person of ordinary skill recognize its existence. Based on these shortcomings, Applicants respectfully submit that there is simply no anticipation of Applicants' invention in Sublett.

The stated rejection further does not consider Applicants' showing of unexpected results. For example, Tables 2 and 3 show that, under certain conditions and polymer compositions, the amount of color reduction exceeds that which would be expected in proportion to the concentration of titanium. This level of reduction could

not be predicted from the disclosure of Sublett. For example, example B in Table 3 shows a 76% reduction in Ti concentration (51 vs 12 ppm) and yet provides a 97% reduction in  $b^*$  (44.5 vs 1.3). Further, in several examples, the color is shifted from the yellow region into the blue region (as indicated by the negative values in examples C and E, Table 3). This magnitude of the color reduction is not suggested by and would have been completely unexpected in view of the cited art.

In view of the above deficiencies, Applicants respectfully submit that Sublett is not a proper anticipating reference because it does not describe the claimed invention with sufficient clarity to demonstrate possession of the invention to the extent that one of ordinary skill in the art would have recognized its existence. As stated in the *Manual of Patenting Examination Procedure* (§2131.03):

"When the prior art discloses a range which touches, overlaps or is within the claimed range, but no specific examples falling within the claimed range are disclosed, a case by case determination must be made as to anticipation. In order to anticipate the claims, the claimed subject matter must be disclosed in the reference with sufficient specificity to constitute an anticipation under the statute. What constitutes a "sufficient specificity" is fact dependent. If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation of the claims. The unexpected results may also render the claims unobvious. The question of "sufficient specificity" is similar to that of "clearly envisaging" a species from a generic teaching".

For the above reasons, therefore, Applicants respectfully submit that the disclosure of Sublett does not anticipate the claimed invention or make it obvious. Applicants, therefore, respectfully request that the rejection be withdrawn.

Rejection of Claims 1-4, 7-10, 12, 15-20, 31-37, 39, 40, and 42 under 35 U.S.C. §103(a)

The Examiner has rejected claims 1-4, 7-10, 12, 15-20, 31-37, 39, 40, and 42 under 35 U.S.C. §103(a) as allegedly unpatentable in view of U.S. Patent No. 5,106,944 to Sublett ("Sublett") and U.S. Patent No. 5,922,816 to Hamilton ("Hamilton") or *J. of Appl. Polym. Science*, Vol. 26 (1981), p. 4233-4245) by Smith et al. ("Smith").

Applicants respectfully traverse the rejection and the statements made in support thereof.

As the Examiner is aware, to establish a *prima facie* case of obviousness, the cited art must suggest to the skilled artisan both the combination or modification alleged to be obvious and that the combination or modification would have a reasonable likelihood of success. See *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991). The cited art also must teach or suggest all of the claim limitations. See *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Here the cited references, considered either individually or in any reasonable combination, neither would have taught or suggested the claimed invention nor would have provided the requisite motivation to combine references.

The deficiencies of the disclosure of Sublett in anticipating or rendering the above claims obvious are set forth above and hereby incorporated by reference. As correctly stated by the Examiner, Sublett suggests a range of titanium amounts, but does not point out advantages in picking the lower end amounts. Sublett, therefore, could not have provided the requisite suggestion or motivation to select the lower titanium ranges claimed in the present invention.

The disclosure of Hamilton fails to remedy the shortcomings of Sublett. Hamilton discloses the use silyl phosphates with polyester/PC blends to deactivate metallic catalyst residues so that the residues lose their ability to catalyze a transesterification reaction between the polyester and the polycarbonate. Hence, the

disclosure of Hamilton is aimed at neutralizing catalyst residues rather than reducing their concentration. Hamilton describes typical catalyst concentration ranges as 0.005 – 0.2 wt% (50 – 2000 ppm), but makes no suggestion or teaching of lowering catalyst concentrations to reduce color. Thus Hamilton, either alone or in combination with the disclosure of Sublett, would not have suggested reducing the amount of titanium to reduce the color of polyester/polycarbonate blends.

The disclosure of Smith adds little or nothing to that of Sublett and Hamilton. Like Hamilton, the Smith disclosure is entirely dedicated to the deactivation of catalyst residues by the addition of certain additives, including phosphorus compounds. Smith, therefore, does not disclose or suggest reducing the level of titanium to reduce the color of polyester / polycarbonate blends. In fact, Smith states that removing catalyst is "impractical" (page 4233) which, if anything, would steer the skilled person distinctly away from Applicants' invention. Clearly, the disclosure of Smith does not contemplate reducing color by lowering the amount of titanium in the polyester. Thus, the disclosure of Smith, alone or in combination with that of Sublett and Hamilton, does not teach reducing catalyst levels and does provide any suggestion or motivation that it would be desirable to do so.

The Office Action states that "one of ordinary skill in the art seeking to minimize these problems would choose lesser amounts of catalyst when producing the polyester". Applicants disagree with this statement and respectfully submit that there is no basis in the cited art for this conclusion. By contrast, based on the disclosures of Sublett, Hamilton, and Smith, it would be entirely reasonable for one of ordinary skill in the art, seeking to reduce color in polyester / PC blends, simply to modify the titanium catalyst by the addition of alkali or alkaline earth metal salts or to deactivate the

polyester catalyst residues by the addition of various phosphorus compounds. In view of these deficiencies, Applicants respectfully request that the rejection be withdrawn.

Rejection of Claims 1-10, 12-20, 31-40, and 42 under 35 U.S.C. §103(a)

Claims 1-10, 12-20, 31-40, and 42 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable in view of U.S. Patent No. 5,106,944 to Sublett ("Sublett") and U.S. Patent No. 5,254,610 to Small et al ("Small") and, optionally in further view of U.S. Patent No. 5,922,816 to Hamilton ("Hamilton") or *J. of Appl. Polym. Science*, Vol. 26 (1981), p. 4233-4245) by Smith et al. ("Smith"). Applicants respectfully traverse the rejection and the statements made in support thereof.

The deficiencies of the Sublett, Hamilton, and Smith in rendering the claimed invention obvious are set forth above and hereby incorporated by reference. The disclosure of Small adds nothing to the above disclosures. Small only describes adding aliphatic and aromatic phosphite compounds to improve the thermal melt stability and the splaying tendencies of polyester/polycarbonate blends. The disclosure of Small makes no statement whatsoever about catalyst levels or any effect on color therefrom. That is, Small, either alone or in combination with Sublett, Hamilton, or Smith, provides no suggestion or motivation to make the claimed invention or suggests any desirability of altering catalyst levels to reduce color. Applicants, therefore, believe the rejection to be in error and request that it be withdrawn.

Rejection of Claims 1-13, 15-26, 28-37, and 39-42 under 35 U.S.C. §103(a)

Claims 1-13, 15-26, 28-37, and 39-42 are rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. Patent No. 4,786,692 to Allen et al ("Allen") in view U.S. Patent No. 5,886,133 to Hilbert et al ("Hilbert"). Applicants respectfully traverse the rejection and the statements made in support thereof.

The disclosure of Allen describes blends of aromatic polycarbonates and copolyesters containing 1,4-CHDM and ethylene glycol in molar ratios of 1:4 to 4:1. The polyesters disclosed in Allen are amorphous polyesters (col. 3, line 50, and col. 5, lines 7-11). As correctly noted by the Examiner, Allen does not disclose an amount of titanium. Further, Allen suggests using phosphorus stabilizers to reduce color formation when processing the polyester / polycarbonate blends. Accordingly, Allen neither provides a suggestion of modifying titanium levels nor discloses any effect of titanium concentration on color levels.

Hilbert does not cure these shortcomings. Hilbert describes a process for preparing a moldable polyethylene terephthalate or modified polyethylene terephthalate composition in the presence of about 1 to about 50 ppm titanium. When the preparation of the polyester involves esterification, lower amounts (i.e., 1-10 ppm) of titanium may be used. By contrast to the amorphous polyesters described in Allen, the polyesters described by Hilbert are mostly crystalline (see, for example, col. 14, lines 38-42 and col. 15 line 65 - col. 16, line 42, and the examples). Hilbert also is silent regarding polyester / polycarbonate blends, and makes no suggestion of using lower amounts of titanium for polyesters blended with polycarbonates or that it would be in anyway desirable to use lower amounts of titanium for polyesters used in blends with polycarbonates. Hence, the disclosure of Hilbert provides no motivation for a person of ordinary skill to seek out the disclosure of Allen. Similarly, on reading Allen, the skilled artisan would not have looked to the crystalline polyesters prepared by Hilbert.

Lacking such motivation, the cited art would not have provided direction or guidance on how to combine their respective disclosures, even if combined. Based on Hilbert and Allen together, a person skilled in the art, at the time the invention was

made, would have had no guidance or suggestion that lower amounts of titanium would be desirable for polyester / polycarbonate blends. Without such guidance or suggestion, for example, it would have been entirely reasonable for the skilled person to prepare a polyester using at catalyst level of 50 ppm titanium, especially if transesterification were used to prepare the polyester. Such a combination would not have provided Applicants' composition as claimed. Applicants respectfully submit, therefore, that the cited references, either alone or in combination, provide no clear or particular showing, a line of reasoning, or objective evidence which would have motivated or guided the skilled artisan to make the claimed invention.

The cited art, therefore, fails to provide a proper suggestion or motivation to combine references. The "showing of a suggestion, teaching, or motivation to combine prior teachings "must be clear and particular...Broad conclusory statements regarding the teaching of multiple references standing alone, are not 'evidence'". See *In re Dembiczak*, 175 F.2d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). Further, there must be a "rational connection between the facts found and the choice made." See *In re Lee* 61 U.S.P.Q. 2d 1430 (Fed. Cir. 2002). Here there is no such rational connection between that which is taught in the cited references and the limitations of the presently claimed invention. Applicants respectfully submit that the motivation stated by the Examiner, "this low level titanium catalyst system would be expected to minimize the well-known problems associated with residual titanium in polyester/PC blends" is not properly based on the disclosures of the prior art but, instead, relies more on Applicants' own disclosure. Rather, there is nothing in the cited disclosures that would have motivated a person skilled in the art at the time the invention was made to look to the cited sources of information, to select particular elements, and to combine them to obtain Applicants' claimed process.



Applicants respectfully submit that the stated rejection fails to establish a *prima facie* case of obviousness. Applicants, therefore, respectfully request reconsideration and withdrawal of the rejection.

Double Patenting Rejection

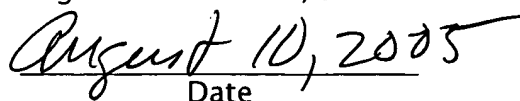
Claims 1-26 and 28-42 stand rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1-6 or U.S. Patent No. 6,723,768. Applicants respectfully traverse the rejection. Although Applicants disagree with the Examiner's rejection, a Terminal Disclaimer under 37 C.F.R. §1.321(c) is submitted herewith. The rejection has thus been overcome and should be withdrawn.

Applicants believe that the application is in condition for allowance. Accordingly, the Examiner is respectfully requested to enter the above amendments and pass the application to issuance.

Respectfully submitted,



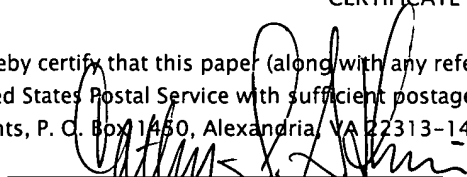
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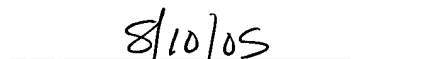
  
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I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.

  
Cathy L. Adkins

  
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